Second Five-Year Review Report

for

Mannheim Avenue Dump Site

Galloway Township, Atlantic County, New Jersey

Prepared by:

U.S. Environmental Protection Agency
Region II
New York, New York

September 2004

139762

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Five-Year Review Report

I. Introduction

This second five-year review for the Mannheim Avenue Dump Superfund (Mannheim Avenue) site, located in Galloway Township, Atlantic County, New Jersey, was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager (RPM), Nigel Robinson. This review covers the inclusive dates of September 1999 to September 2004. The five-year review was conducted pursuant to Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. §9601 et seq. and 40 CFR 300.430(f)(4)(ii), and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of five-year reviews is to assure that implemented remedies protect human health and the environment and that they function as intended by the decision documents. This report will become part of the site file. Reports pertinent to this five-year review are listed in the Appendix of the report.

This is the second five-year review for the Mannheim Avenue site. The triggering action for this review is the completion of the first five-year review, September 14, 1999.

II. Site Chronology

Appendix A (attached) summarizes the site related events from discovery to the second five-year review.

III. Background

Site Location and Description:

The Mannheim Avenue Dump Superfund Site is located along Mannheim Avenue in a two acre sand and gravel clearing occupying lots two and three of Block 54 in Galloway Township, New Jersey. The site lies on Mannheim Avenue between Shiler Road and Clarks Landing Road. The site is approximately 1,500 feet southeast of Tar Kiln Branch and two miles southwest of the Mullica River. The area immediately surrounding the site is relatively flat woodlands of scrub pine and low bush. The area is within the New Jersey Pinelands Protection Area. A sand and gravel pit is located across the street from the site and is owned and operated by Galloway Township. Over 400 residences lie within a one-mile radius of the site. Many of the residences and facilities rely on groundwater wells for potable water supply.

Geology/Hydrogeology:

The Cohansey Sand and the Kirkwood Formation form an important water-bearing unit used as a major source of potable water in the area. At the site, this unit is an unconsolidated deposit of sands and gravels interbedded with clay. A semi-permeable clay layer, approximately 3 to 5 feet thick, underlies the site at approximately 50 feet below ground surface. This layer separates the shallow zone of the aquifer system from the deeper zone. Throughout the region, this deeper zone extends to a low permeability clay layer, which marks the lower boundary of the aquifer system. The depth to water at the site is approximately 35 feet below ground surface. In the shallow zone, groundwater flows in the northwesterly direction towards Tar Kiln Branch. In the deep zone, groundwater flows in a northeasterly direction towards the Mullica River.

Land and Resource Use:

The site is located in a rural area that is zoned residential, the area to the northeast is predominantly zoned as a preservation area. The site and adjoining parcels of land remain undeveloped.

History of Contamination:

The site was originally used as a sand and gravel excavation operation by the Galloway Township for road construction material. After mining operations ceased in 1964, the excavated portions of the site were used for waste disposal. Beginning in 1964, Lenox, Inc. (Lenox) obtained permission from Galloway Township to use the site to dispose of industrial wastes produced at its manufacturing facility in Pomona, New Jersey. The drummed wastes were deposited on the floor of the excavated portion of the site, approximately 5 feet below ground surface, and subsequently compacted into 35 waste mounds, along with other municipal wastes, and covered with soil. Leaded porcelain fragments and household refuse was also mixed in the waste mounds. An investigation by the New Jersey Department of Environmental Protection (NJDEP) in 1982 revealed that many of the 55-gallon drums were exposed and deteriorating. Samples collected from the exposed drums indicated the presence of trichloroethylene (TCE), toluene, ethylbenzene, methylene chloride, cadmium, lead, nickel and chromium.

Initial Response:

Under a 1984 EPA administrative order, the Potentially Responsible Parties (PRPs) under EPA's oversight, undertook the removal and off-site disposal of waste material buried in soil mounds at the site.

Basis for Taking Action:

The site was placed on the National Priorities List (NPL) in 1983. In December 1984, EPA issued an Administrative Order to Lenox and the Township of Galloway to remove the waste material buried in the soil mounds at the site, conduct soil and groundwater sampling, and excavate and remove contaminated soil from the site. In 1985 and 1986, Lenox conducted soil, groundwater, surface water, and domestic well sampling. This sampling showed that the principal contaminants within the waste at the site were lead and TCE. Pursuant to an Administrative Order on Consent, issued in 1988, Lenox and the Township of Galloway conducted a remedial investigation (RI) at the site. The feasibility study (FS) was completed in 1989.

Contaminants:

TCE - groundwater
TCE and lead - soil

IV. Remedial Actions

Remedy Selection:

In 1984, EPA issued an Administrative Order to Lenox and the Township of Galloway requiring them to remove contaminated soil and waste material from the site and to conduct soil and groundwater sampling. In 1985, Lenox completed the removal of contaminated soil and waste material from site soils. In a 1988 RI conducted by Lenox and the Township, site soils were found to have no remaining levels of TCE above the detection limit of 0.5 parts per million (ppm). Out of 20 samples analyzed for lead, only one contained levels above EPA's acceptable level for residential use of 400 ppm. The average lead concentration in these samples was 80 ppm. Consequently, no further action for site soils was conducted under CERCLA.

On September 27, 1990, EPA issued a Record of Decision (ROD) for the groundwater remediation. The selected remedy included:

- Restoration of the groundwater aquifer to the Drinking Water Standard of 1 part per billion (ppb) for TCE by extracting contaminated groundwater from both the shallow and deep zones of the aquifer system, followed by on-site treatment via air stripping and discharge of the treated groundwater back to the aquifer.

- Short-term monitoring of the groundwater during the design period to assess the potential migration of contaminants towards residential wells.

- Long-term monitoring of the groundwater, once the extraction/treatment/discharge system is operational, to ensure the effectiveness of the system in removing contaminants and controlling migration.

- Contingency planning to install individual carbon adsorption treatment units at residences, if monitoring indicates that site-related contamination is threatening residential wells.

Remedy Implementation:

In June 1991, two PRPs, Lenox and the Township of Galloway, entered into a Consent Decree with EPA to undertake implementation of the remedy selected in the ROD. This implementation involved the performance of the Remedial Design (RD) and the construction of the remedy. The purpose of the RD was to produce all the plans, drawing and specification necessary to implement the selected remedy.

Between November 1993 and January 1994, Lenox attached Point Of Entry Treatment Systems (POETS) to six of the fourteen residential wells downgradient of the site. This was based on the detection of low levels of TCE in monitoring well 23-2, the monitoring well closest to some residential wells. POETS are granular activated carbon absorption filter systems that provide clean drinking water by removing organic contaminants from the incoming groundwater supply. The POETS on the residential wells have been maintained on an ongoing basis by Lenox.

In 1994 the groundwater remediation system was constructed and started operating. By 1995 the influent to the treatment plant was below the drinking water standard for TCE and Lenox petitioned EPA to shut down the treatment plant. In 1996, EPA concurred and the groundwater treatment system was shut down.

System Operations/Operation and Maintenance (O&M) and Monitoring:

As indicated above, the soil remediation is complete and no further monitoring is required. The groundwater treatment system was constructed, operated and shut down in 1996. The only ongoing remedial activities are groundwater monitoring and use of POETS at some residential properties.

Following construction of the groundwater treatment system in 1994, Lenox conducted quarterly monitoring of POETS and at fourteen of the 33 groundwater monitoring wells at the site. In 1995, after over a year of operation, Lenox petitioned EPA for permission to shut down the groundwater treatment system at the site and to reduce the number of groundwater wells that were being monitored and their monitoring frequency. After reviewing the data presented by Lenox, EPA agreed that the TCE level

entering the treatment plant was below the Drinking Water Standard of 1 ppb. The data also indicated that the TCE level in some of the monitoring wells continued to be less than 1 ppb for more than one year. EPA then reduced the number of wells to be monitored and the monitoring frequency from quarterly to semi-annually. In 1999, further adjustments were made to the groundwater monitoring activities following the first five-year review. Since 1999, seven monitoring wells have been sampled on a semi-annual basis (Appendix C provides a summary of data collected in these wells from 1999 through 2003). Since 1999, monitoring has shown that six of the seven wells did not have any results exceeding the drinking water standard for TCE. The only monitoring well which exceeded the TCE standard was MW-17-2, which exceeded the standard in 1999, 2000 and 2001. However, in 2002 and 2003 all sample results were below drinking water standards. Based on its review of all data collected at the site, EPA has determined that no further groundwater sampling is needed. Further discussion between EPA and NJDEP will establish the end of the groundwater monitoring program.

Monitoring of residential wells has never shown TCE levels above the drinking water standards. Six of the fourteen residential wells sampled have POETS, which have been installed, sampled and maintained by Lenox. At these residences, samples collected included a sample of groundwater at the influent, mid-point and effluent ports on the POETS. The POETS on one of the residences was disconnected by the homeowner in January 1998, so only influent (untreated) samples were collected from this well from 1998 to 2003. The historical monitoring database shows that TCE has never been detected at levels above the drinking water standard of 1 ppb in any residential well either before or after treatment by the POETS. The October 2003 residential monitoring round was the twenty-ninth consecutive sampling round where TCE was not detected in any residential well sample above the laboratory minimum detection limit of 0.5 ppb.

The residential sampling program has shown low levels of chloroform and 1,2-dichloropropane in some of the residential wells. These compounds are not site-related compounds. For the purpose of CERCLA, there is no further need to maintain or monitor these units or any other residential wells as a result of a release from this site. Lenox and the individual homeowners should mutually come to agreement on their further use.

V. Progress Since the Last Review

The first five-year review was conducted in September 1999. This five-year review has found that the implemented remedy has achieved the goal set forth in the ROD of restoring the groundwater aquifer to meet Drinking Water Standard.

VI. Five-Year Review Process

Administrative Components:

The five-year review team consisted of Nigel Robinson (Remedial Project Manager), Charles Nace, (Risk Assessor), Pat Seppi (Community Involvement Coordinator) of EPA and Mark Chamberlain, (Hydrogeologist, US Corps of Engineers).

Community Notification and Involvement:

EPA notified the community of its initiation of the five-year review process by publishing a notice in the Atlantic City Press on July 11, 2004. The notice indicated that EPA would be conducting a five-year review of the remedy at the Mannheim Avenue Dump Site to ensure that the remedy remains protective of public health and is functioning as designed. The notice included the RPM's address and telephone number for questions related to the five-year review process. In addition, the notice indicated that once the five-year review is completed, the results will be made available to the public at the following locations:

Atlantic County Library
Galloway Township Branch
306 W. Jimmie Leeds Road
Pomona, NJ 08240
(609) 652-2352

U. S. EPA's Records Center
290 Broadway
New York, N.Y. 10007

The RPM did not receive any response to the July 11, 2004 notice that was placed in the Atlantic Press.

Document Review:

The document, data and information that were reviewed in completing the five-year review are found in Appendix E.

Data Review:

The data reviewed included the data from the first five-year review and subsequent groundwater monitoring data collected at the Site from 1999 through October 2003.

Groundwater Monitoring

Monitoring has indicated that the goal of restoring the groundwater aquifer to meet all appropriate drinking water standards specified in the ROD has been achieved. With this cleanup goal achieved, the PRPs have petitioned EPA to close out the site. EPA has determined that there is no further need for groundwater monitoring and will therefore take the required administrative actions to close out the site and have it deleted from the NPL.

Site Inspection:

The site was last inspected by EPA on April 16, 2003 by Nigel Robinson, the RPM. The site was found to be in good condition; native vegetation had regrown in areas where soil removal had taken place and in areas where clearing was done for groundwater remediation activities.

Interviews:

The site remedy was discussed with State programs representatives and the PRP. There were no interviews with local officials or community representatives.

VII. Remedy Assessment

Question A: *Is the remedy functioning as intended by the decision documents?*

Yes, the remedy has achieved the cleanup objectives for soil and groundwater.

Question B: *Are the (a) exposure assumptions, (b) toxicity data, (c) cleanup levels, and (d) remedial action objectives (RAOs) used at the time of remedy selection still valid?*

(a) The exposure assumptions that were used to estimate the potential risks and hazards that may be present at the site may change as science or policies change. These changes could result in increases or decreases to the risks or hazards that were calculated in the human health risk assessment. The exposure assumptions that were used in the risk assessment were applicable for future residential use of groundwater as a potable water supply. This exposure pathway and the related exposure assumptions are still valid. (b) The toxicity values that are used to estimate the potential risks and hazards that may be present at the site may change as science advances. The toxicity values presented in the risk assessment for the three chemicals

of concern listed in the risk assessment, TCE, toluene, and lead, have all changed since the risk assessment was completed. These changes would provide a different quantitative value for risks and hazards associated with the site, however it should be noted that in addition to the toxicity values changing, the concentrations of contaminants in the groundwater have also changed, resulting in a net decrease in contaminant concentration. During the last four rounds of groundwater monitoring, all of the site-related contaminant concentrations were either not detected, or detected at levels below associated groundwater standards. (c) The ROD references Table 1 as a reference source for Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered Criteria (TBCs) for groundwater. This table has been regenerated and is included as Appendix D. Some contaminants, which are shaded in Appendix D, have had values that have changed since the issuance of the ROD. These new values would be the values that would currently be cited for being protective of public health. (d) The RAOs are still valid at this time.

Question C: *Has any other information come to light that could call into question the protectiveness of the remedy?*

At this time, there is no information that calls into question the protectiveness of the remedy.

Remedy Assessment Summary

Contaminated soils were addressed in a removal action prior to the 1990 ROD. Groundwater was cleaned up as a result of the remedy selected in the 1990 ROD. There are no further remediation activities necessary for this site.

VIII. Recommendations and Follow-up Actions

With the groundwater aquifer having been restored, EPA recommends that the Site be removed from the NPL.

IX. Protectiveness Statement(s)

The CERCLA remedy at the Mannheim Avenue Dump Superfund Site has achieved its goal for both soil and groundwater contamination. The site is now protective of human health and the environment and is expected to remain so.

X. Next Review

This review will be the last five-year review; no further review will be conducted.

Approved by:

William Mc Cabe

George Pavlou, Director
Emergency and Remedial Response Division

9-23-04
Date

APPENDICES

Mannheim Avenue Dump Superfund Site

Appendix A

Chronology of Site Events

Events	Date
Site used as landfill	1964 to 1970s
Industrial survey submitted by Lenox, Inc. to NJDEP indicated that waste may have been dumped at the site	1981
NJDEP performed site investigation	1982
Date proposed to National Priorities List	1982
Final Listing on the National Priorities List	1983
EPA issued Administrative Order to PRPs for removal of waste and contaminated soil	1984
PRPs complete removal activities	1985
PRPs conduct soil, groundwater, surface water and domestic well sampling	1985-1986
EPA issued Administrative Order to PRPs to conduct RI/FS	1988
PRPs conducted RI/FS	1988-1990
EPA issued Record of Decision (ROD)	1990
Consent Decree signed by PRPs	1991
Remedial Design performed by PRPs	1991-1993
Remedial Action performed by PRPs	1993-1994
Approval of Operations and Maintenance Plan	1992
Operation of the groundwater treatment plant began	1993
PRPs request to EPA to discontinue operation of treatment plant	1995
EPA grants PRPs' request to shut down groundwater pump and treat system.	1996
EPA completed first five-year review	1999
Continued Operation and Maintenance	1999-2004

Mannheim Avenue Dump Superfund Site

Appendix B

Estimated Annual System O&M Costs

Dates		Total Costs
From	To	
1999	2000	$109,044
2000	2001	$42,030
2001	2002	$26,000
2002	2003	$26,126
2003	2004	$27,270
TOTAL		**$230,470**

Mannheim Avenue Dump Superfund Site

Appendix C
TCE Concentrations in Groundwater Monitoring Wells

January 1999 through October 2003

Sampling Date	TCE Concentration (ppb)						
	MW3-2	MW9-2	MW17-2	MW20-2	MW21-2	MW23-2	MW24-2
January 14, 1999	N/A	0.54	4.6	0.27	0.33	0.54	0.54
April 15, 1999	N/A	0.47	3.9	0.26	<0.19	<0.19	<0.19
October 21, 1999	0.66	0.75	3.1	0.19	<0.19	<0.19	<0.19
April 13, 2000	0.67	0.70	4.3	0.20	<0.2	<0.20	<0.20
October 18, 2000	0.41	<0.20	3.4	0.20	<0.2	<0.20	<0.20
April 19, 2001	<0.39	<0.39	1.3	0.39	<0.39	<0.39	<0.39
October 18-22, 2001	<0.39	<0.39	1.3	0.39	<0.39	<0.39	<0.39
April 11, 2002	<0.39	<0.39	1.3	0.39	0.67	<0.39	<0.39
October 17-18, 2002	0.15	0.16	0.52	0.06	<0.06	<0.06	<0.06
April 17, 2003	0.31	0.10	0.35	0.04	0.38	<0.04	<0.04
July 24 - 25, 2003	0.29	0.04	0.42	0.04	0.55	<0.04	<0.04
Oct 31 or Nov 7, 2003	<0.04	0.04	<0.04	0.04	0.21	<0.04	<0.04

N/A - Not Analyzed
ROD cleanup level for TCE = 1 (ppb)

Mannheim Avenue Dump Superfund Site

Appendix D:

ARARs and TBCs for chemicals that were identified in the Record of Decision (Table 1). Chemicals that have had values changed since 1990, are presented in shaded cells.

Chemical	Federal SDWA MCL (ppb)	New Jersey MCL (ppb)
Benzene	5	1
Ethylbenzene	700	700
Methylene chloride	-----	3
Toluene	1000	1000
Trichloroethene	5	1
Arsenic	10	50
Barium	2000	2000
Beryllium	4	4
Cadmium	5	5
Chromium	100	100
Iron	300 (Secondary standard)	300 (Secondary standard)
Lead	15 (Lead action level)	15 (Lead action level)
Manganese	50 (Secondary standard)	50 (Secondary standard)
Nickel‡	-----	-----
Thallium‡	2	2

---- No standard

‡ 610 ppb for Nickel and 1.7 ppb for Thallium based on EPA Ambient Water Quality Criteria for the Protection of Human Health from National Recommended Water Quality Criteria: 2002 (EPA-822-R02-047)

Mannheim Avenue Dump Superfund Site

Appendix E

List of Documents Reviewed

1. Five-Year Review Report for the Mannheim Avenue Dump Site - 1999.
2. Record of Decision for the Mannheim Avenue Dump- 1990.
3. Consent Decree for the Mannheim Avenue Dump - 1991
4. Operation and Maintenance Manual - 1994.
5. Groundwater Monitoring Reports - 1999 through 2003
6. Final Report and Notice of Completion - 2004

Appendix F

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name (from WasteLAN): Mannheim Avenue Dump Superfund Site

EPA ID (from WasteLAN): NJD980654180

Region: 2	**State**: NJ	**City/County**: Galloway Township/Monmouth County

SITE STATUS

NPL Status: ■ Final ☐ Deleted ☐ Other (Specify)

Remediation Status (choose all apply): ☐ Under Construction ■ Constructed ■ Operating

Multiple OUs? ☐ Yes ■ No | Construction Completion Date : 04/04/1994

Are portions of this site in use or suitable for reuse? ■ Yes ☐ No ☐ N/A

REVIEW STATUS

Lead Agency: ■ EPA ☐ State ☐ Tribe ☐ Other Federal Agency

Author Name: Nigel Robinson

Author Title: Remedial Project Manager | **Author Affiliation:** EPA

Review Period: 09/14/1999 to 09/14/2004

Date(s) of Site Inspection: 04/16/2003

Type of Review: ■ Post-SARA ☐ Pre-SARA ☐ NPL-Removal ☐ Non-NPL Removal Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion ■ Statutory

Review number: ☐ 1 (first) ■ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:
☐ Actual RA Onsite Construction at OU#___
☐ Actual RA Start at OU#_____
☐ Construction Completion
■ Previous Five-Year Review Report
☐ Other (specify)_____

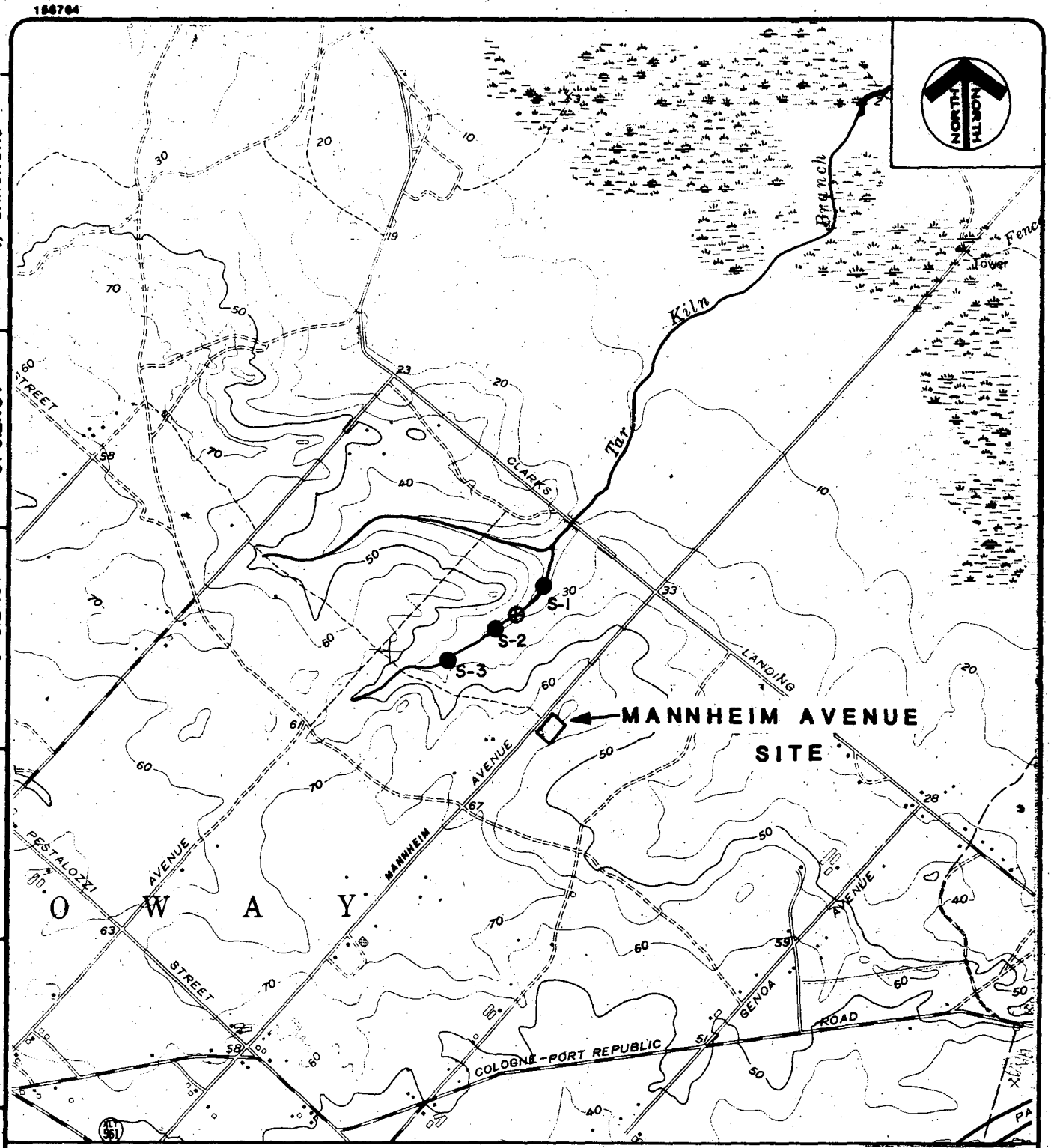
Triggering action date (from WasteLAN): 09/14/1999

Due date (five years after action date): 09/17/2004

Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no
Is human exposure under control? ■ yes ☐ no
Is the contaminated groundwater under control? ■ yes ☐ no
Is the remedy protective of the environment? ■ yes ☐ no

Acres of site in use or suitable for reuse __ restricted __2__unrestricted.

156764



⊕ APPROXIMATE LOCATION OF APRIL 16, 1986 SAMPLING POINT

● S-1 APPROXIMATE LOCATION AND DESIGNATION OF MAY 9, 1990 SAMPLING POINTS

QUADRANGLE LOCATION

SCALE 0 2000FT

GERAGHTY & MILLER, INC.
Environmental Services

LOCATION MAP, Mannheim Avenue Site,
Galloway Township, New Jersey

FIGURE 1

DRAFTER: V. CARUNCHO
MGR.: C. GILROY
COMPILER: C. GILROY
CAD FILE: NON-CAD
FILE NO.: 1082
PROJ. NO.: NY0810
DATE: 5-90